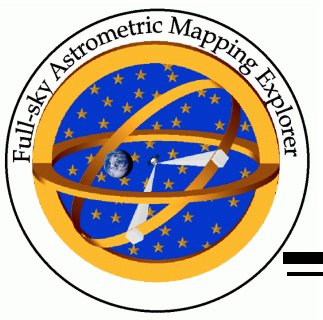
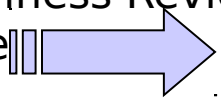


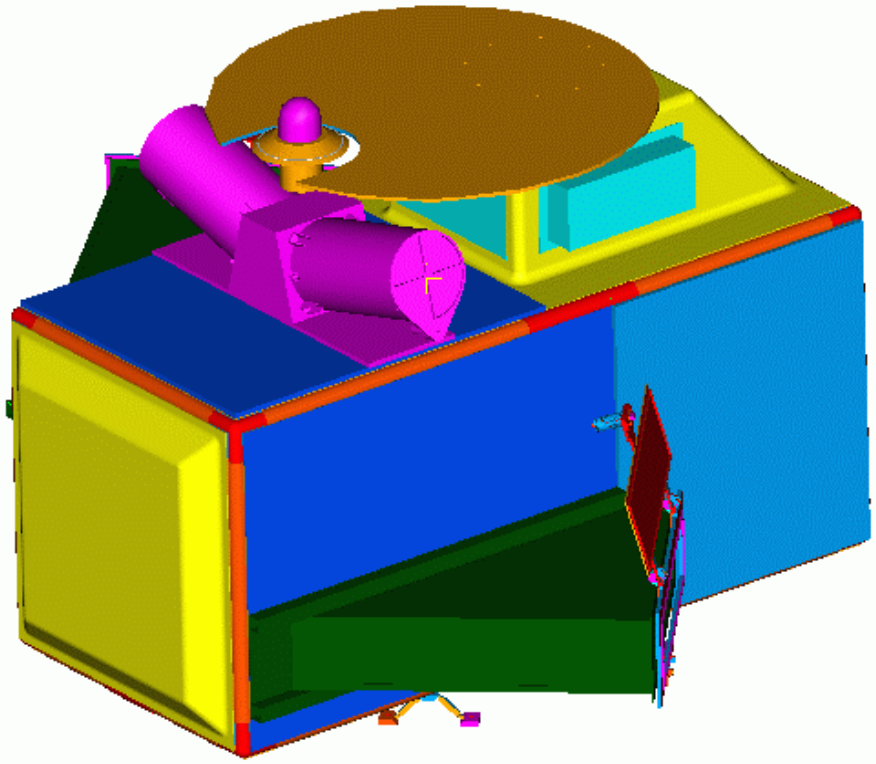
Observatory Integration and Test at NRL

Scott Chappie, David Mason

OBSERVATORY AIT

- Instrument Delivery to NRL
- Instrument Receiving and Inspection
- Post Delivery Acceptance Test (NRL Buy off)
- Star Tracker/Omni Antenna Installation
- Instrument Integration to the S/C Bus
- First Full Functional (Ambient Condition)
- Test Readiness Review
- Magnetic Balance
- EMI/EMC
- Spin Balance & Mass Properties
- Modal Testing & Jitter Testing (If Required)
- Random Vibration, Acoustic
- Pyro Shock/ Mechanism Deployment
- TVAC (Instrument doors deployment, and FPA Excitation)
- End to End Compatibility Test (With Ground Station)
- Post Environmental Test Full Functional
- Post Environmental Test Alignment Verification
- Pre-Ship Readiness Review
- Test Complete  Ship to KSC

Instrument Delivery to NRL

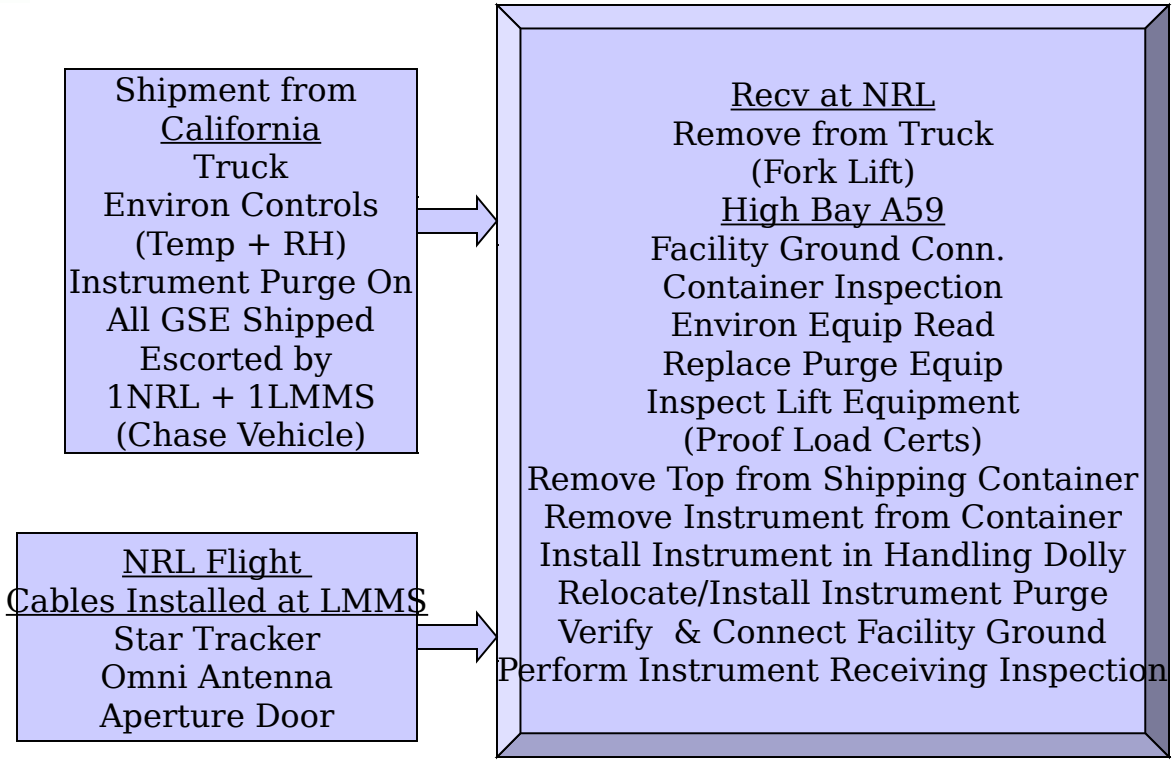


- Deliver to NRL
  - Instrument Configuration
    - In Shipping Container with
    - GN2 purge for Humidity.
    - Shock Monitors
    - Doors Closed
    - Triple Bagged
    - Grounded to Container
  - GSE
    - Mechanical
      - Lifting Frame
      - Rotation Frame
      - Instrument Drill Template
    - Electrical
      - S/C Power Rack
      - Data Collection Computers
        - Command & Control S/W
        - Telemetry Data
      - Temperature Control
    - Thermal
      - Instrument for 10°C Ops (TBD)
    - Contamination Control
      - GN2 Purge Suitcase

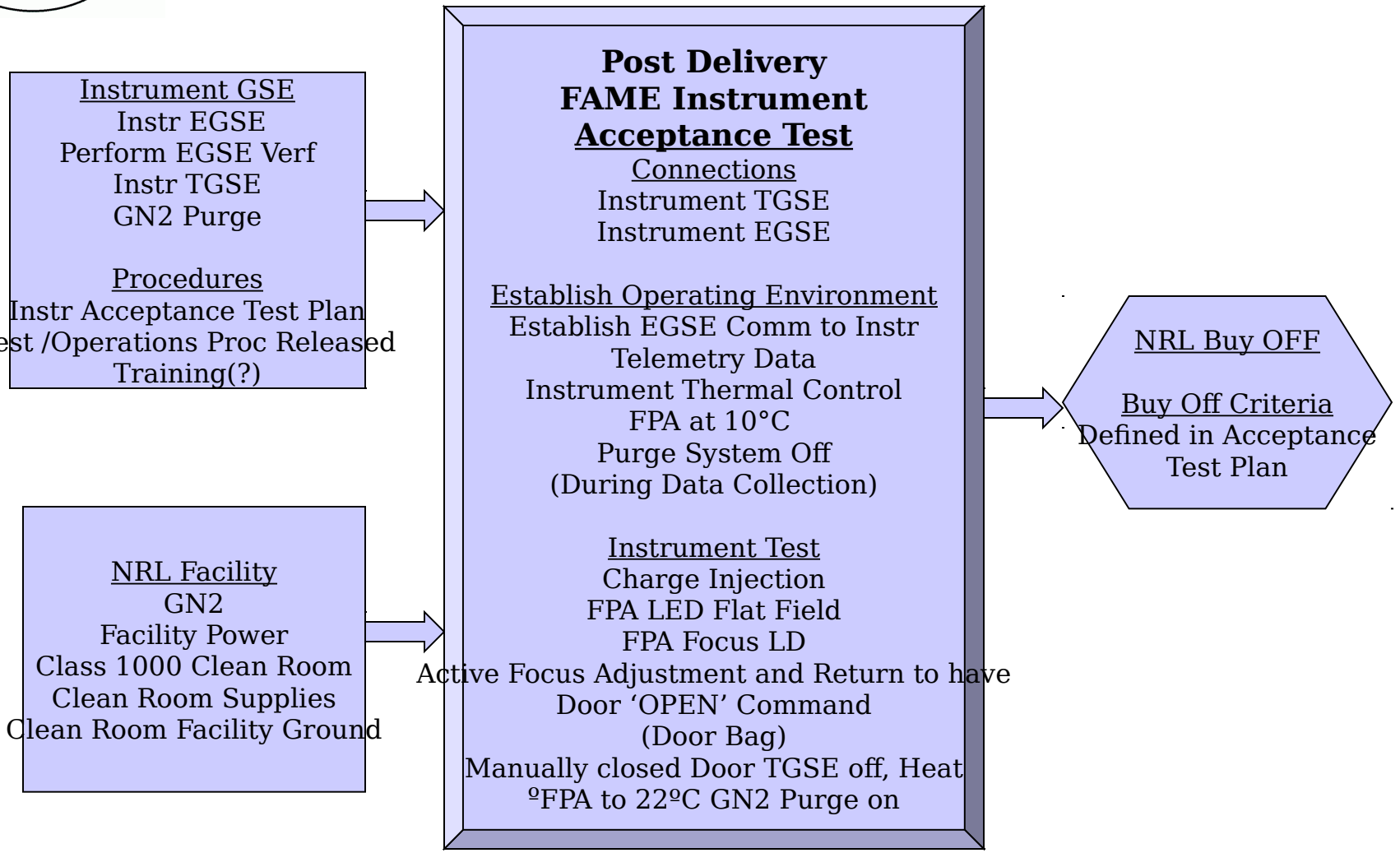
Transportation Requirements

- Shipping container
  - Modify Shipping Container to Accept ECD
  - Instrument Handling Dolly (FLOTRON)
  - GN2 Purge Connections, Environment Monitors/Recorders
  - External Ground lug
  - Fork Lift at NRL to move shipping container
  - Shipping Container Road Covers (Vendor (Scott))
  - Transport Environments (3Gs all axes) requires an Air Ride Trailer (Double Drop)
- Complimentary Equipment
  - EGSE and Power Rack
  - TGSE
  - Lifting Slings and Associated Lift Hardware
  - Lifting Sling and Spreader Bar (Long Throw into Shipping Container)
  - Wire Ropes for Lift Fixture for Container Integration

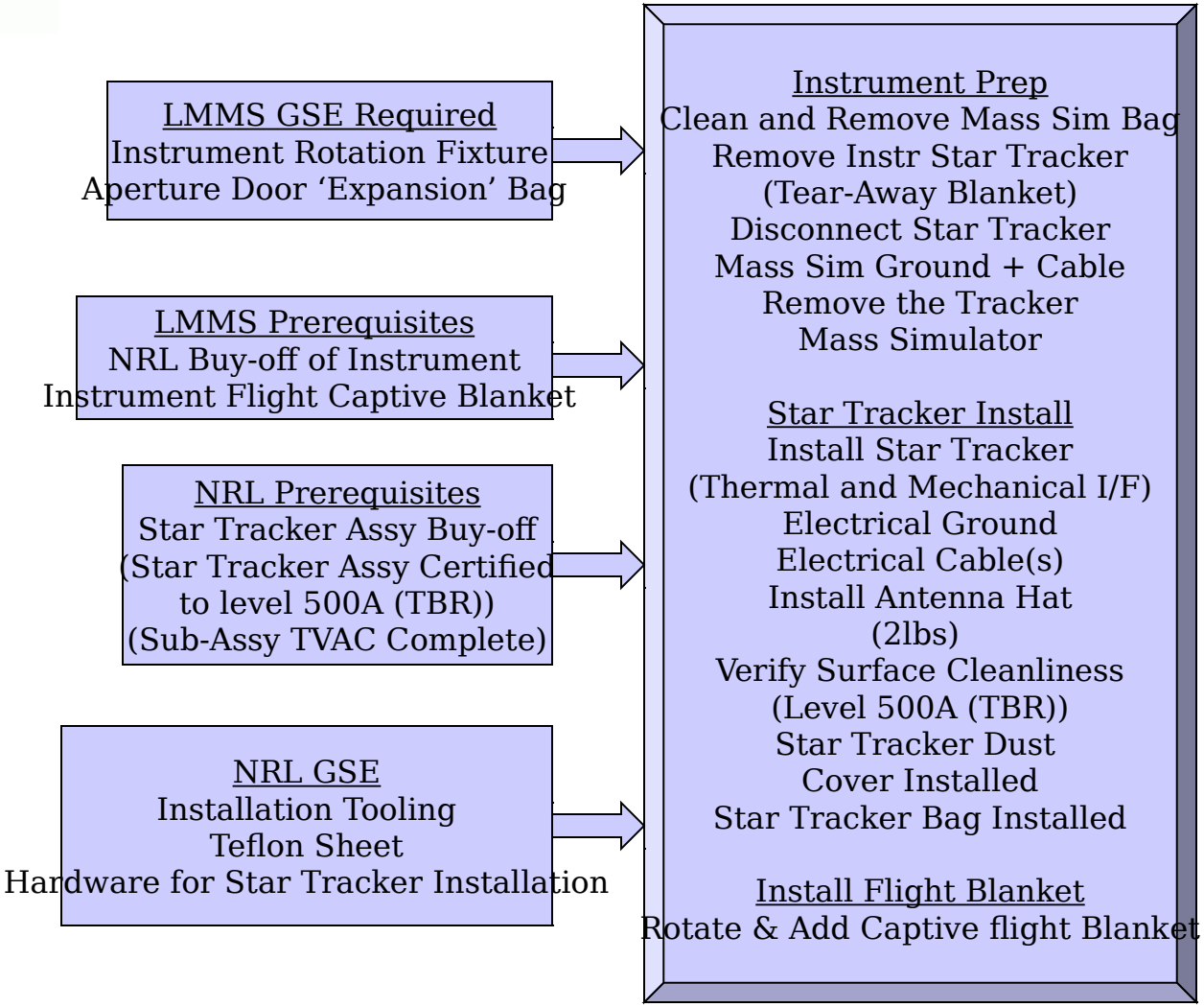
Instrument Receiving and Inspection



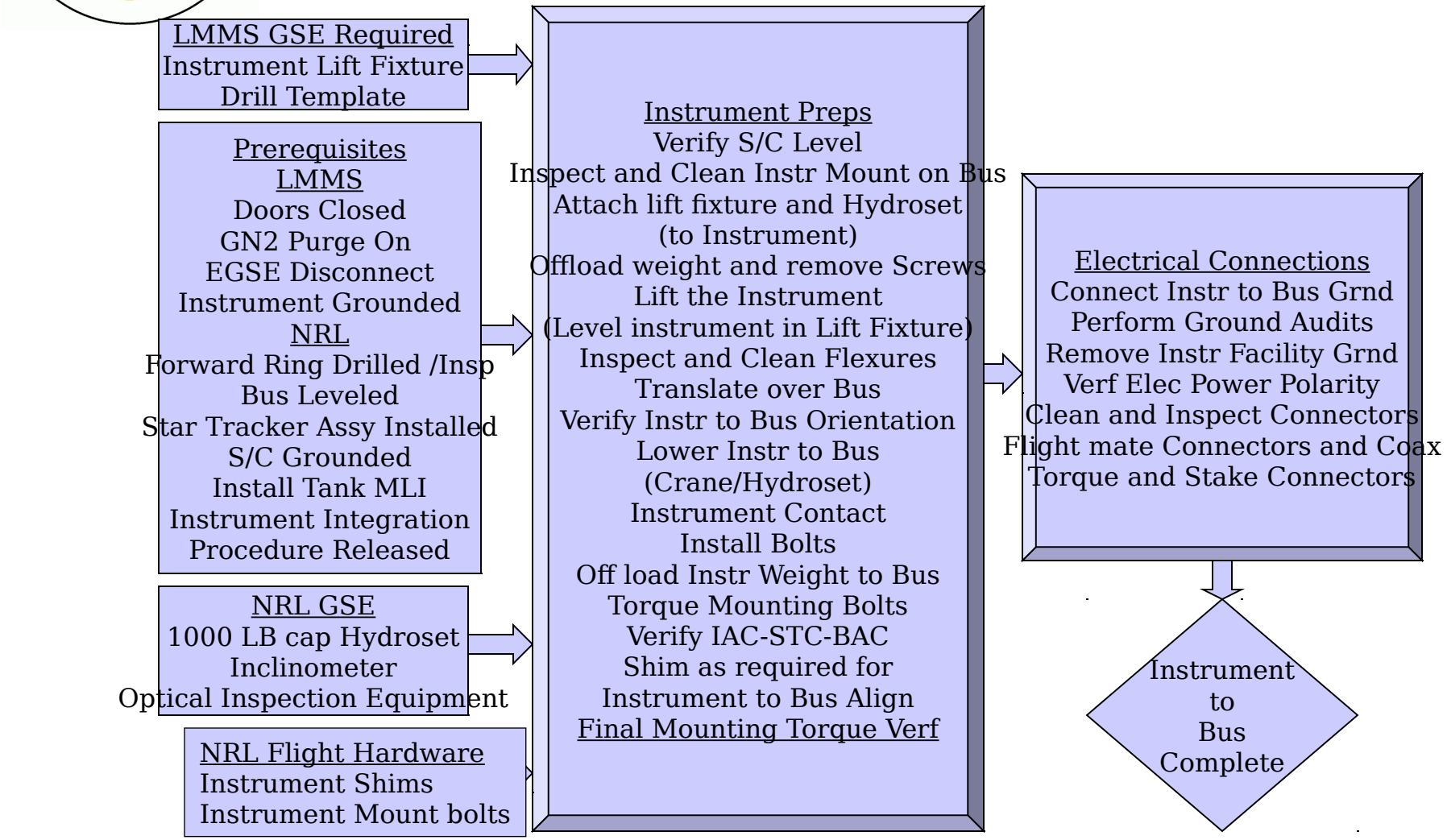
Post DeliveryAcceptance Test (NRL Buy off)



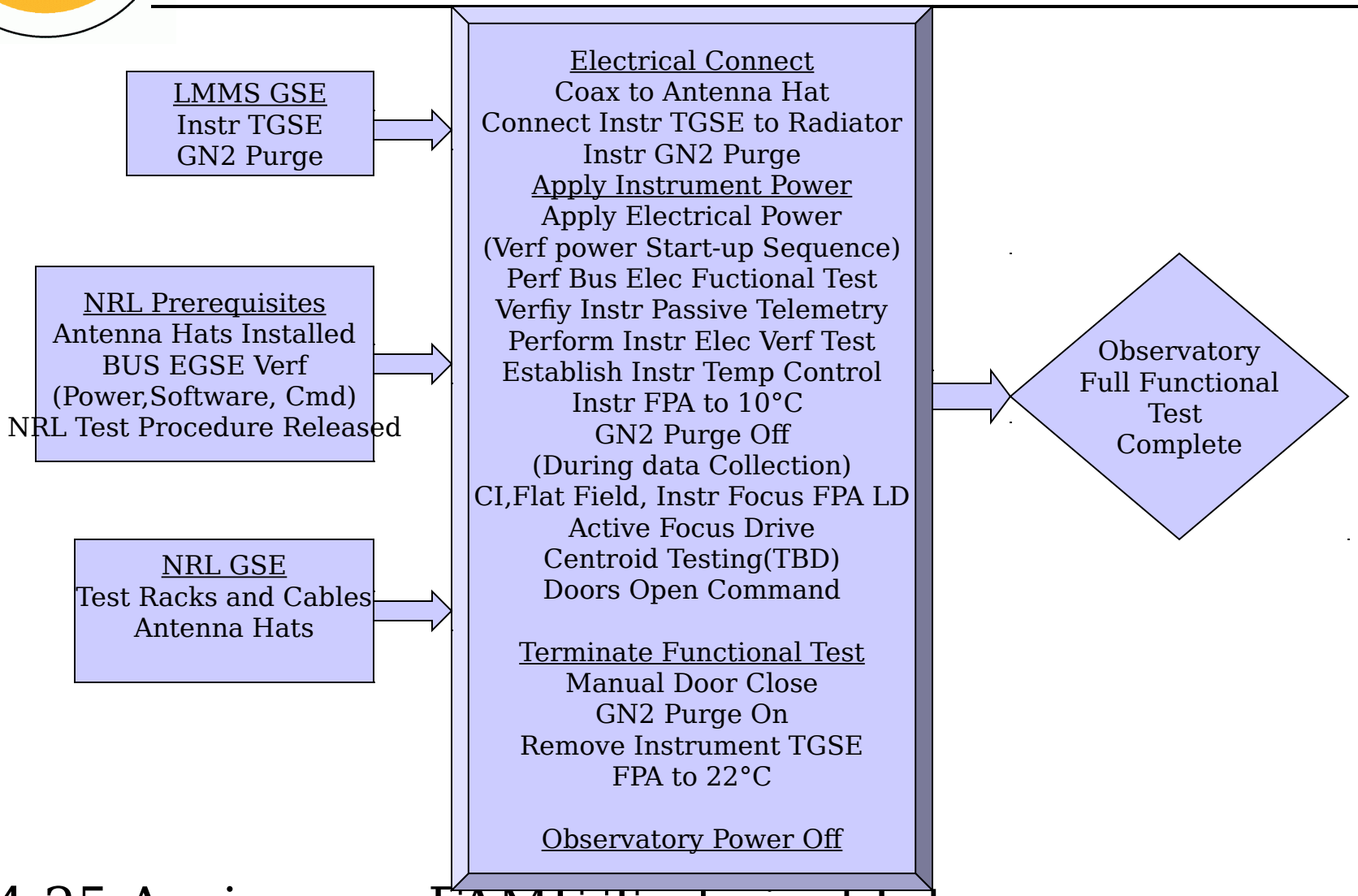
Star Tracker/Omni Antenna Installation



Instrument Integration to the S/C Bus



First Full Functional (FPA @10°C)

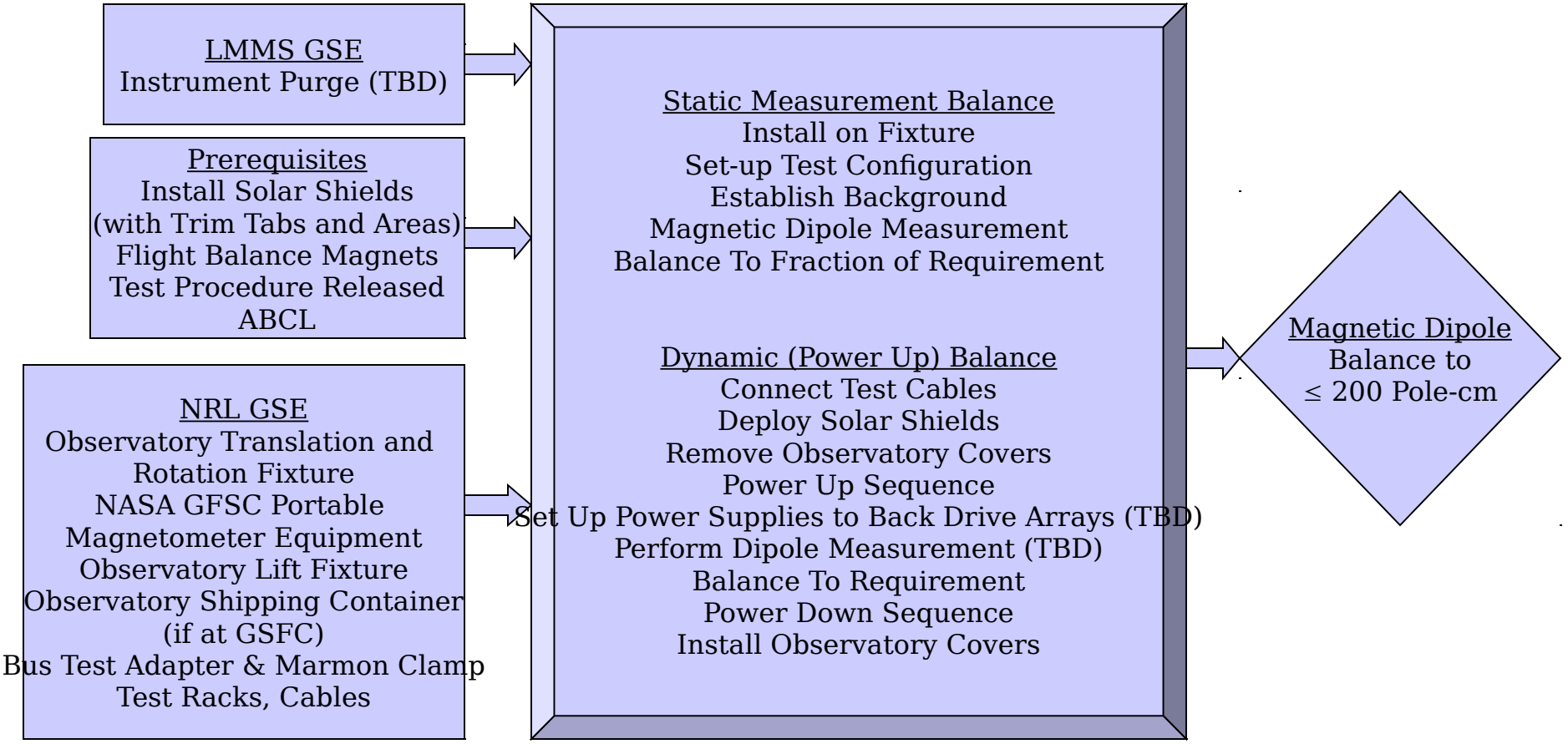


Test Readiness Review

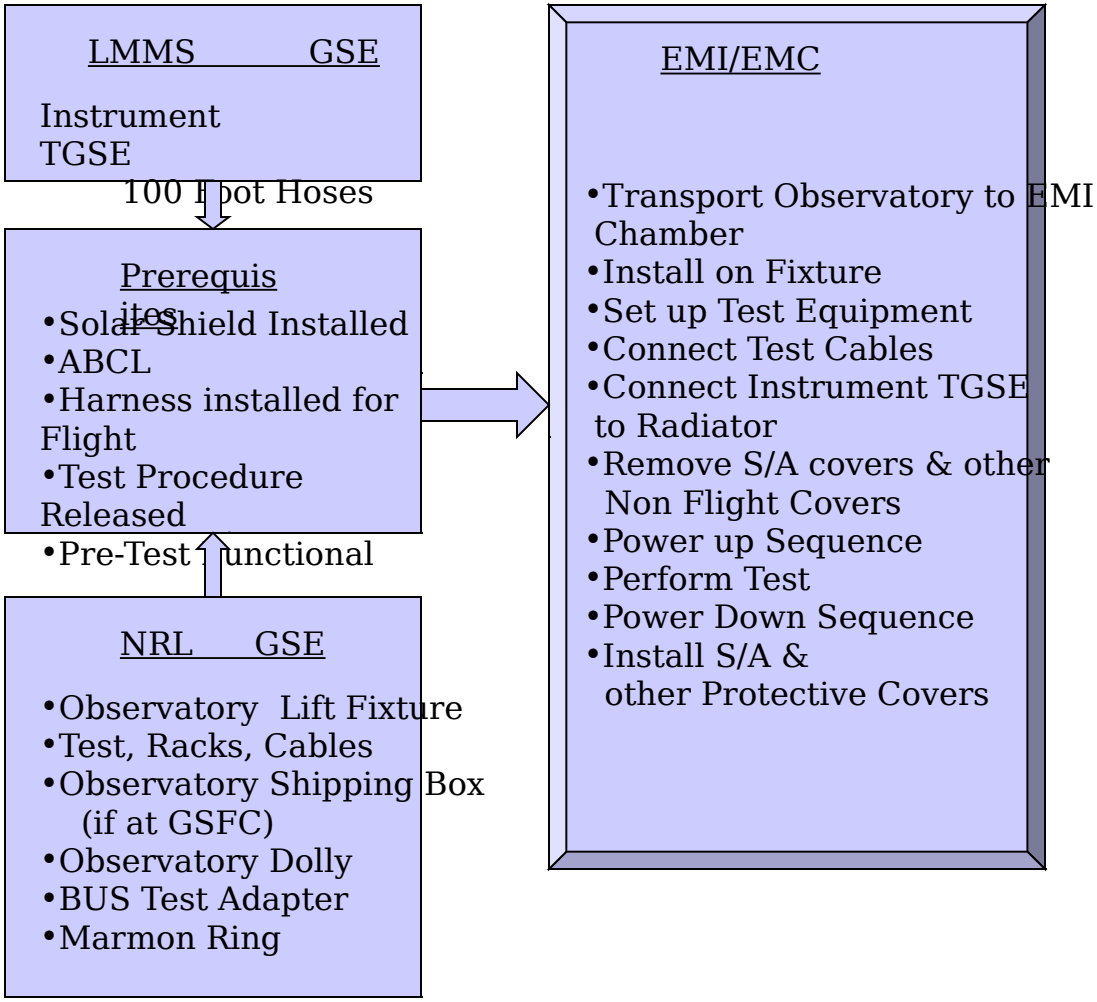
Prerequisites

- Instrument Buy -Off Complete
- Bus Buy Off Complete
- Environmental Test Procedures Released
- Open Item Audit and Evaluation (DRs, NMRS)
- Configuration Audits (As Built Configuration List)
- Complete Full Functional Analysis Complete
- Pre-Environmental Test Alignments Complete (Test Baseline)

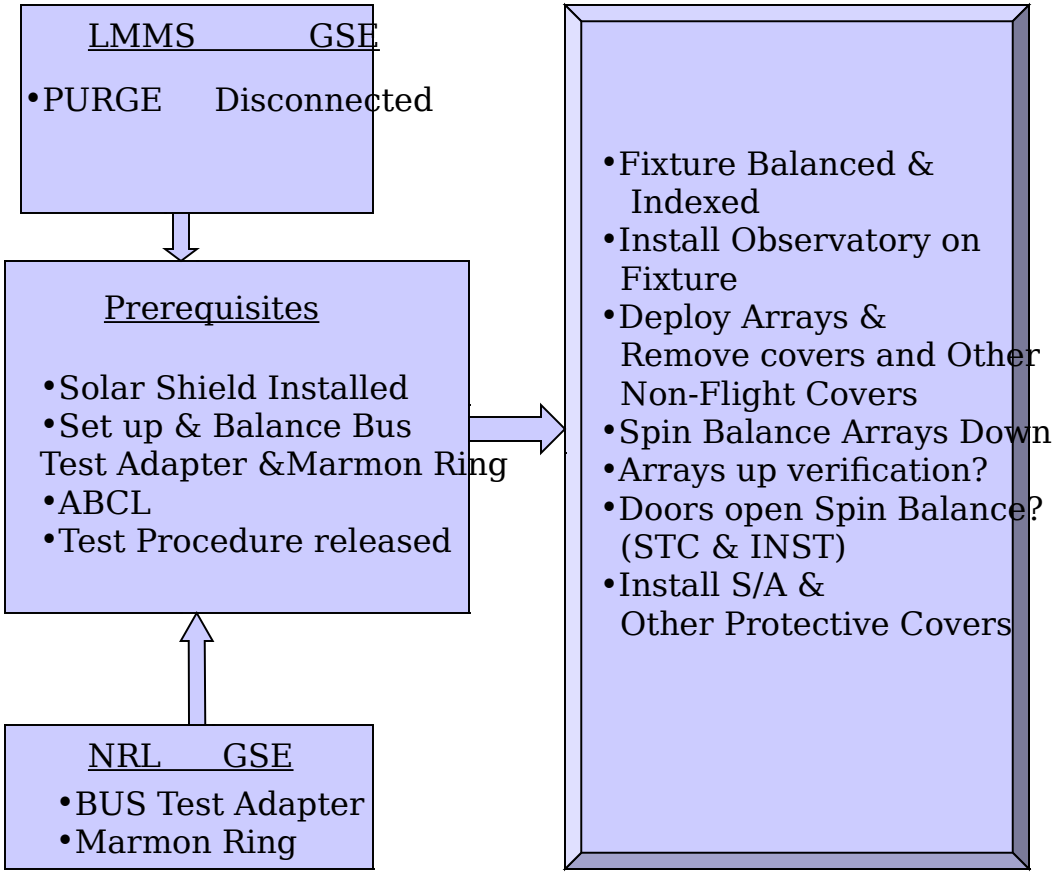
Magnetic Balance (@NRL, or GSFC)



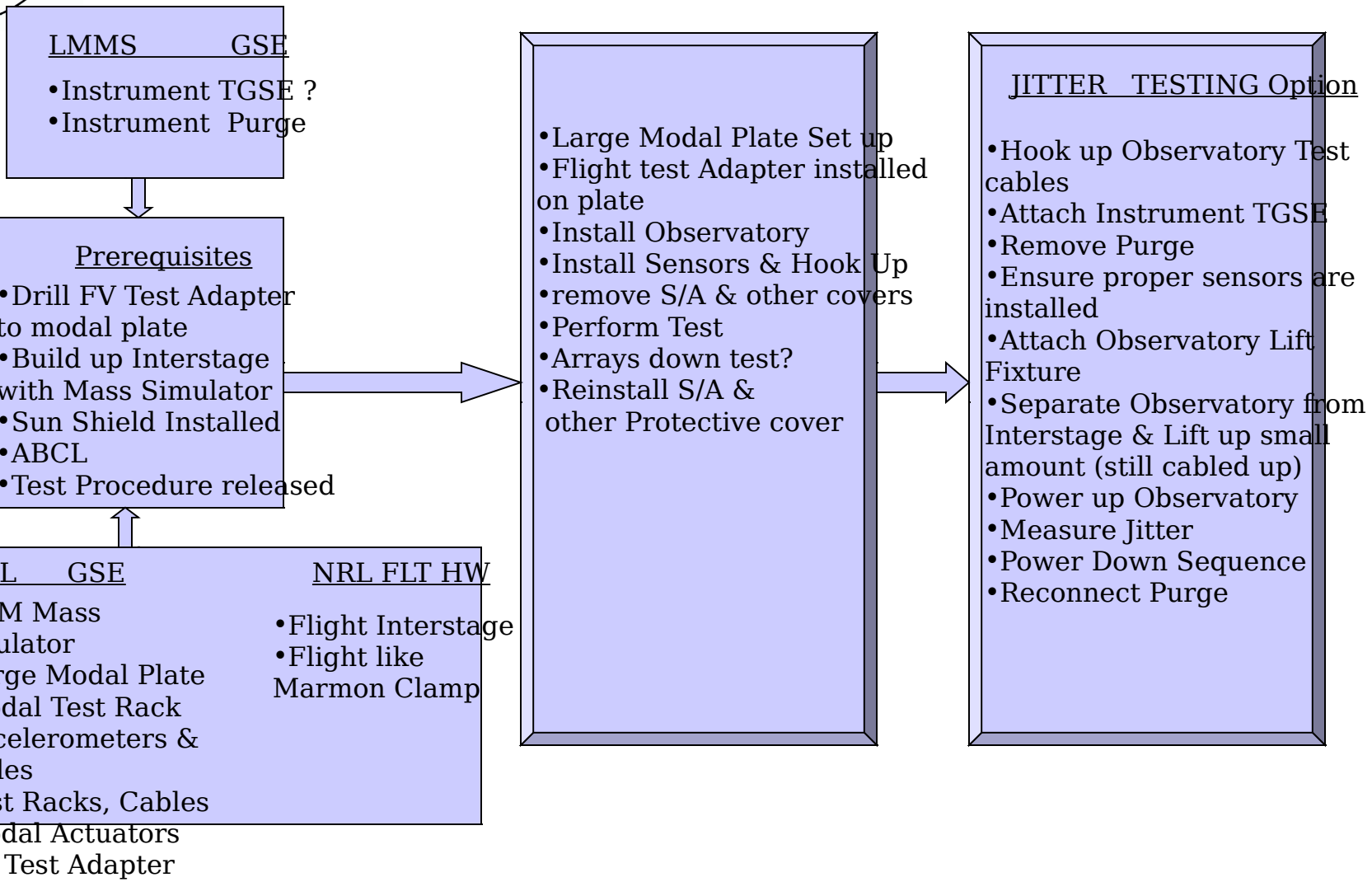
EMI/EMC @NRL or GSFC



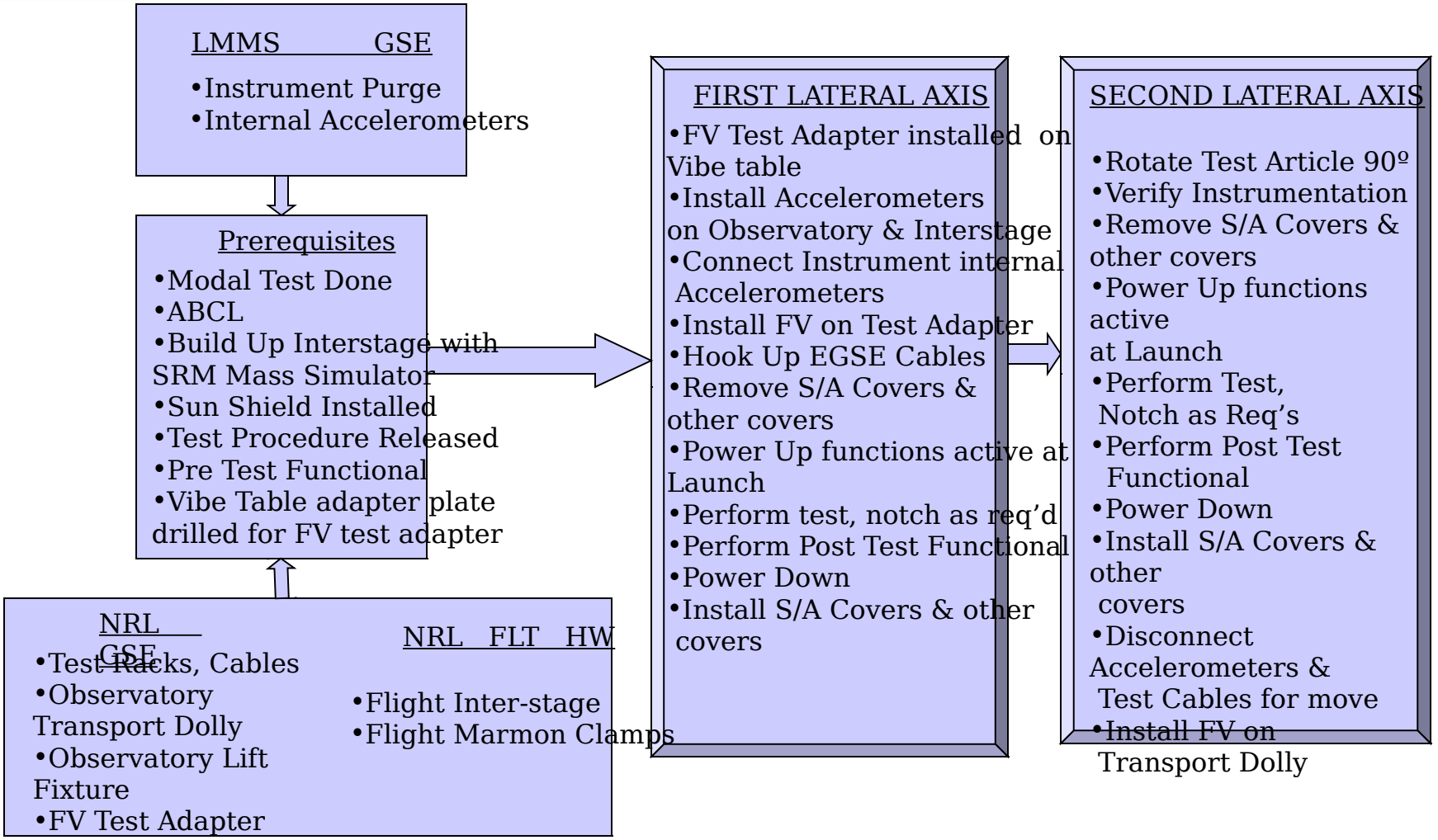
Spin Balance & Mass Properties



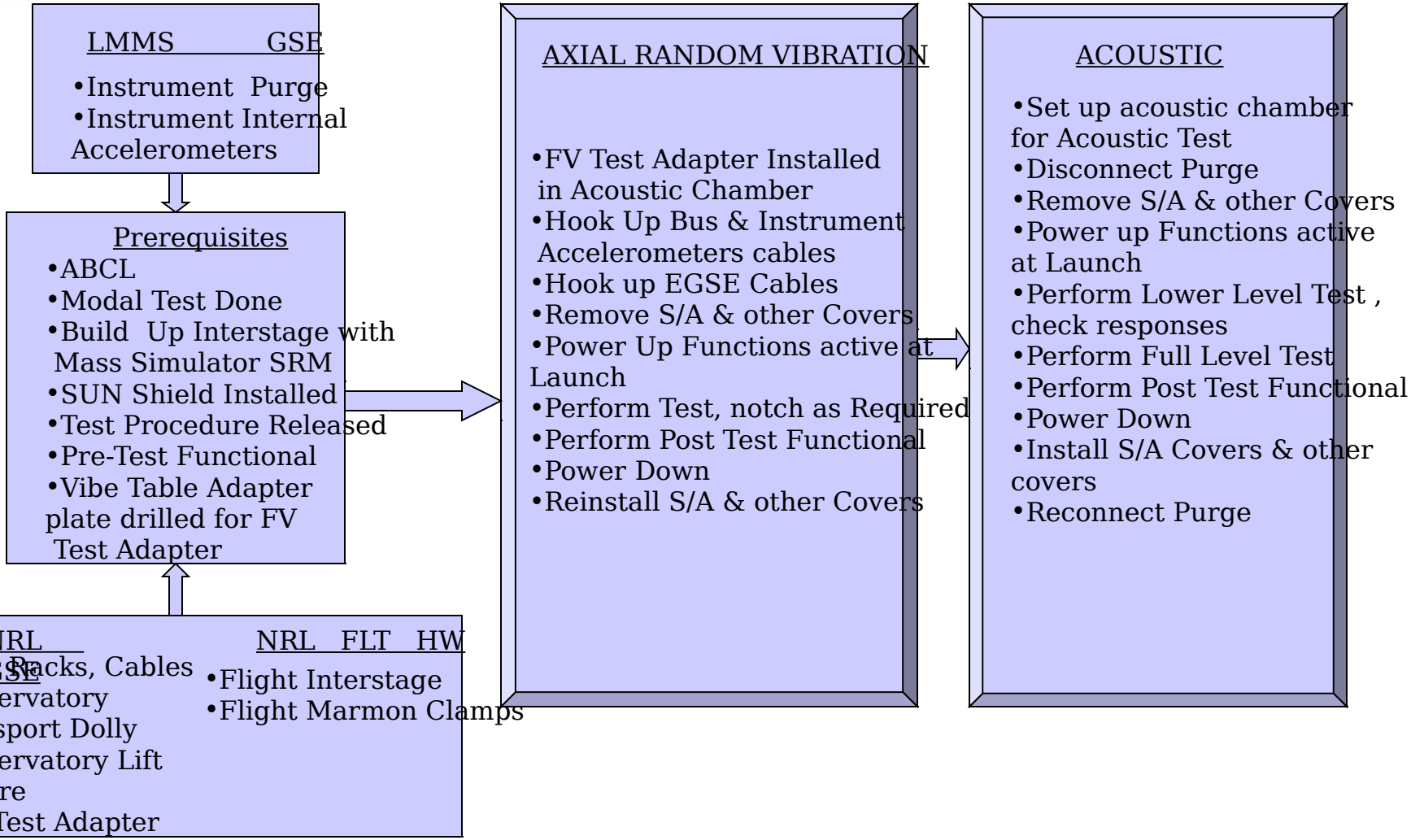
Modal Testing



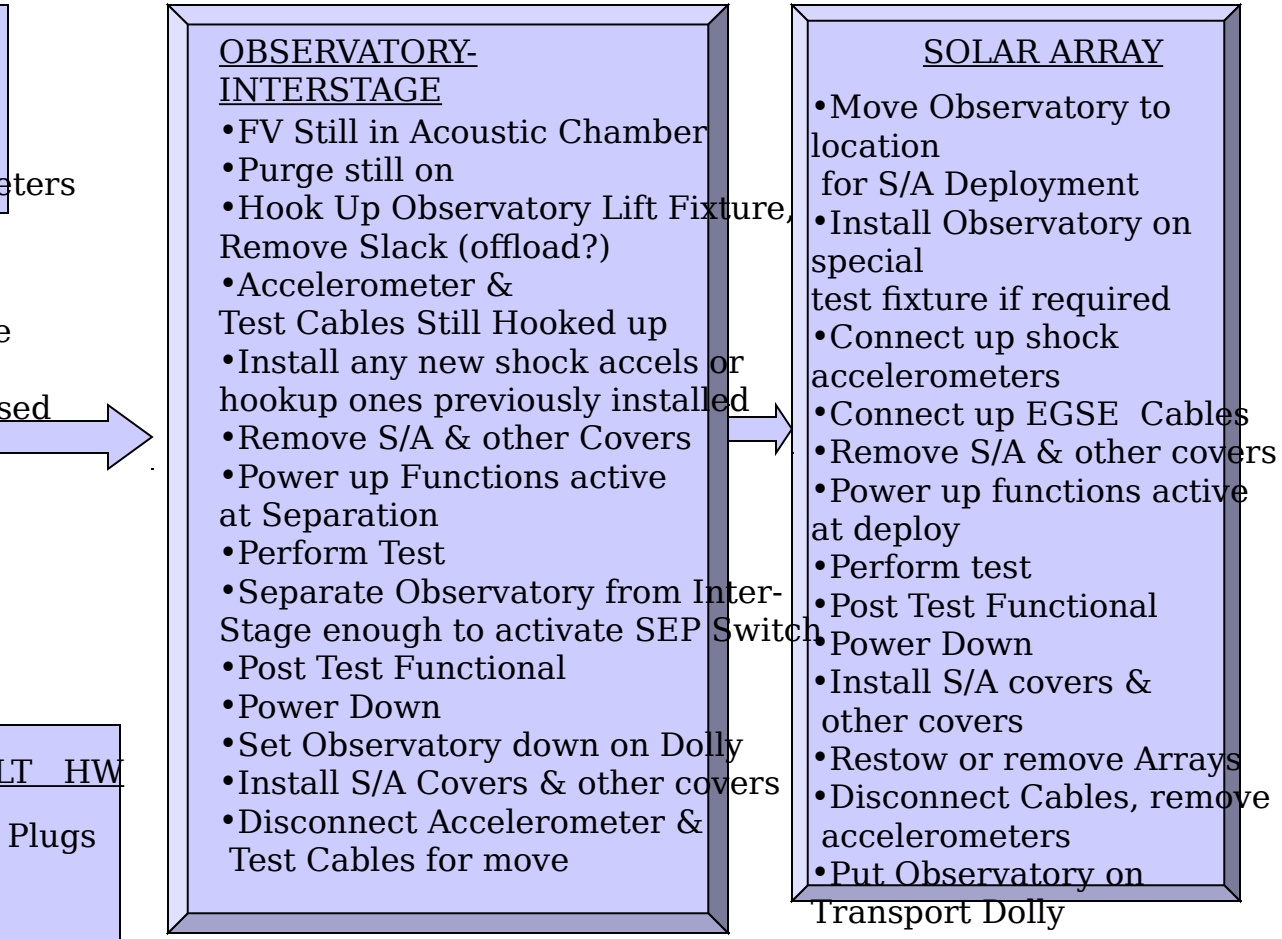
Lateral Random Vibration



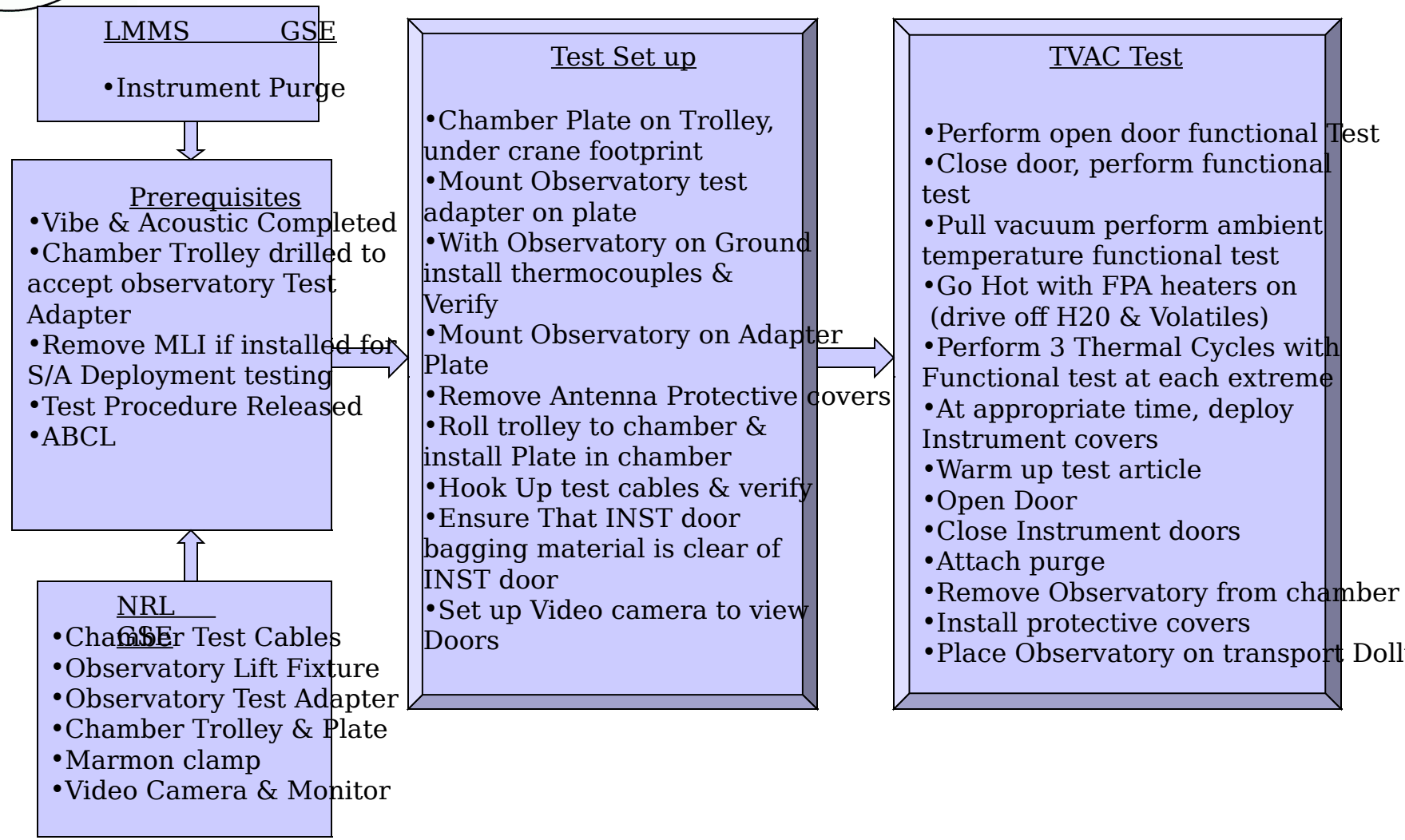
Axial Random Vibration & Acoustic



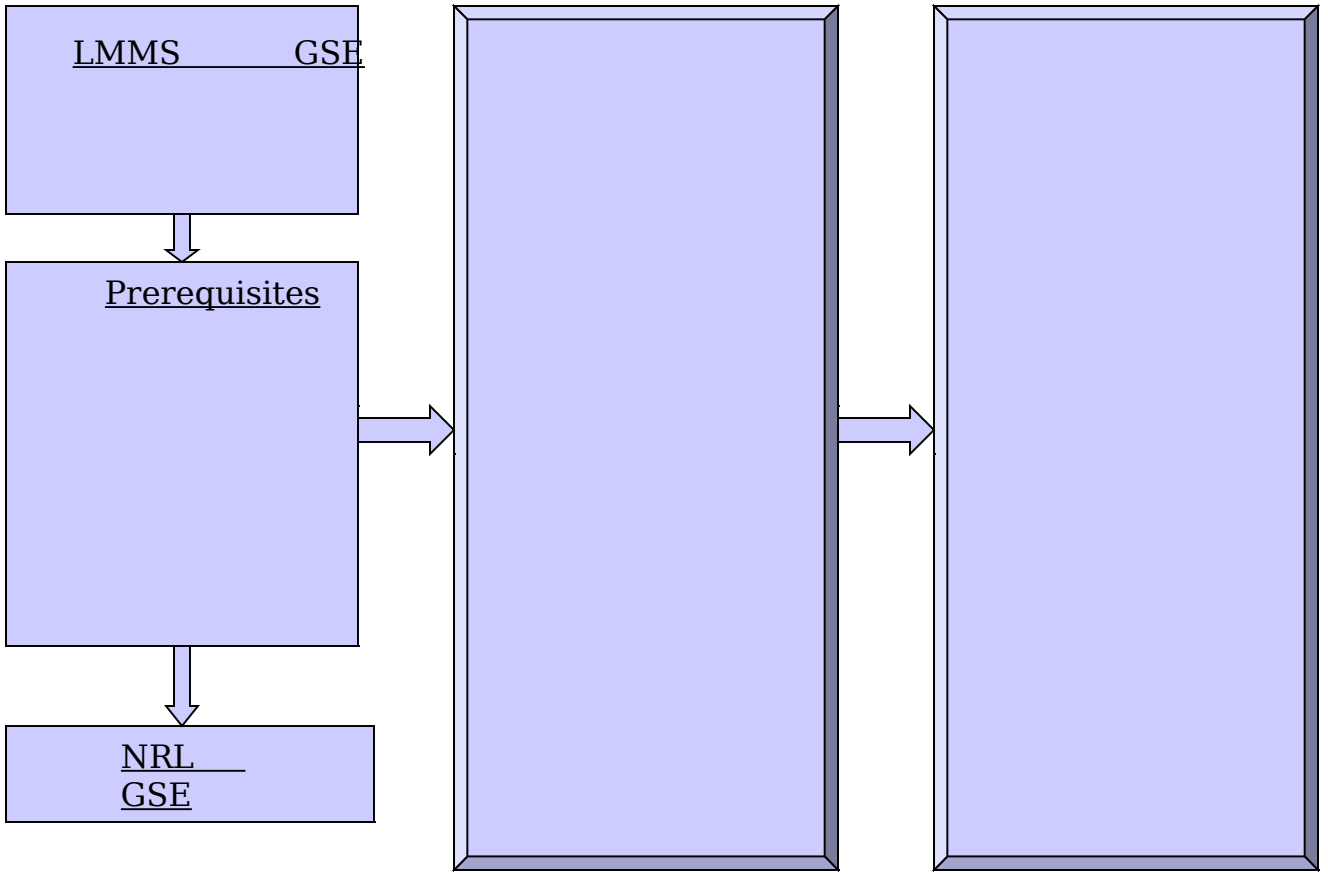
Pyro Shock Mechanism Deployment



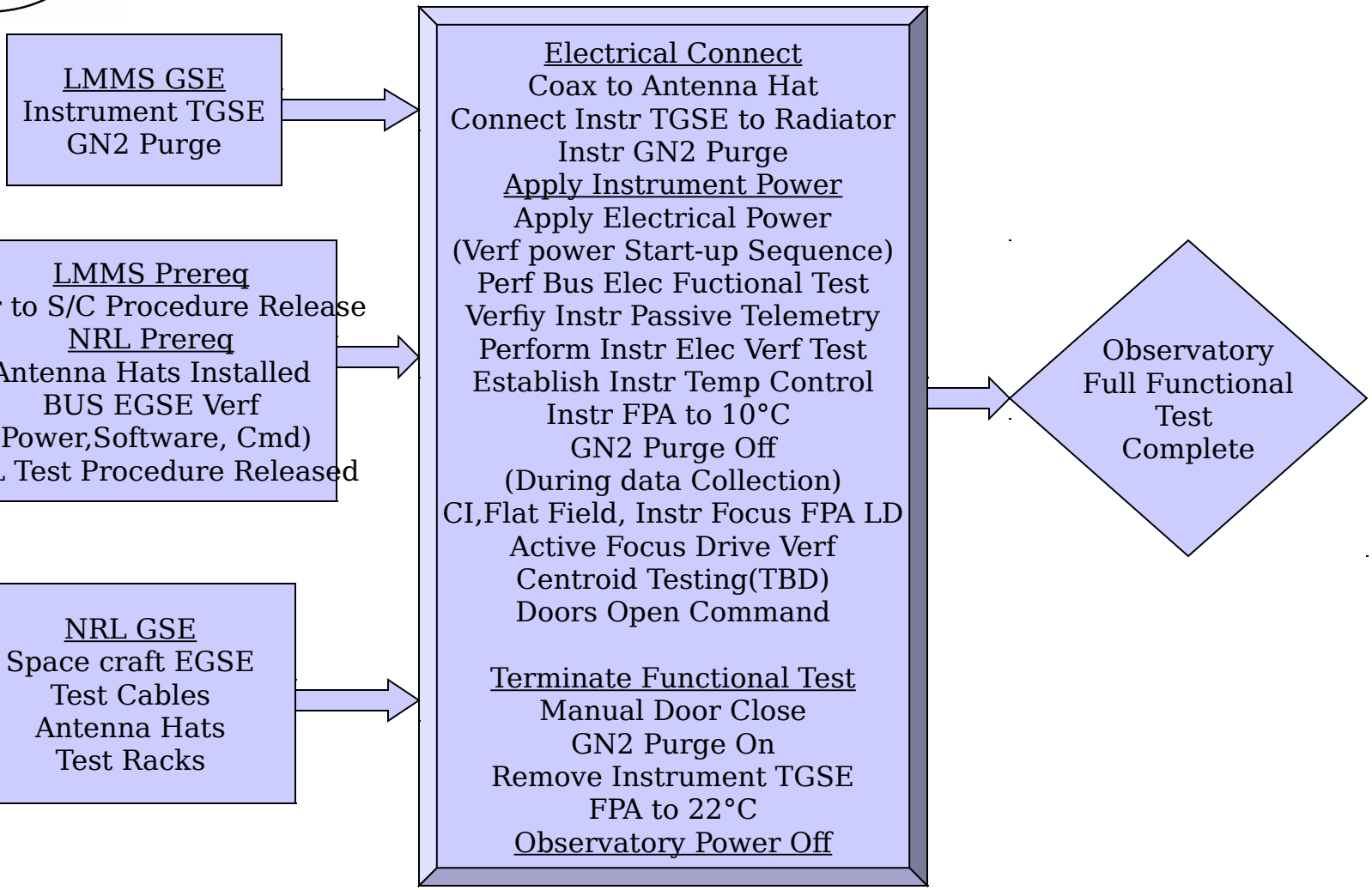
Thermal Vacuum (TVAC)



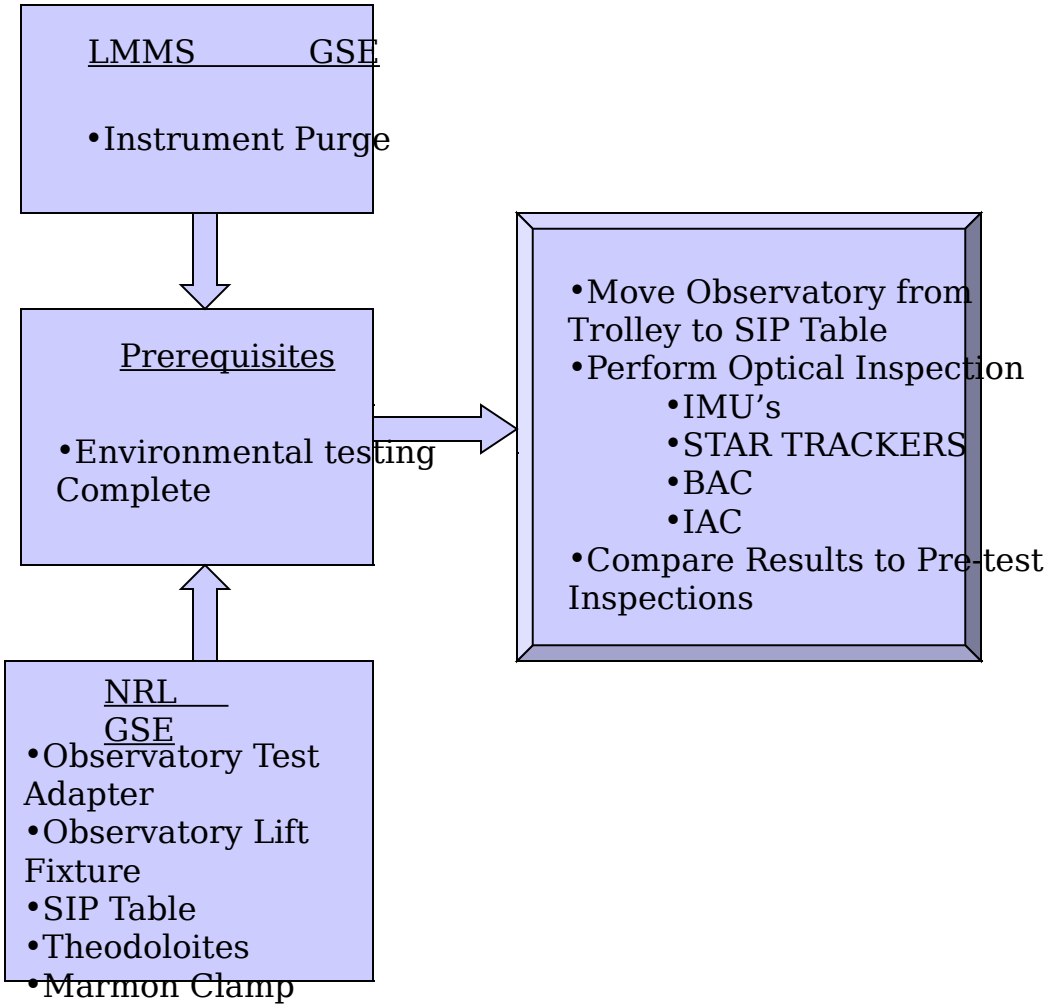
End to End Compatibility



Post Environmental Test Full Functional



Post Environmental Test Alignment Verification



Testing Complete Pre-Ship Readiness Review

Prerequisites

Instrument Buy -Off Complete
- Bus Buy Off Complete
- Environmental Testing Complete
- Open Item Audit and Evaluation (DRs, NMRS)
- Configuration Audits (As Built Configuration List)
- Complete Full Functional Analysis Complete
- Post-Environmental Test Alignments Complete